

ABSTRACT OF THE DISCLOSURE

A fully imidized, solvent-free polyimide foam having excellent mechanical, acoustic, thermal, and flame resistant properties is produced. A first solution is provided, which includes one or more aromatic dianhydrides or derivatives of aromatic dianhydrides, and may include one or more aromatic diamines, dissolved in one or more polar solvents, along with an effective amount of one or more blowing agents. This first solution may also advantageously include effective amounts respectively of one or more catalysts, one or more surfactants, and one or more fire retardants. A second solution is also provided which includes one or more isocyanates. The first and second solutions are rapidly and thoroughly mixed to produce an admixture, which is allowed to foam – in an open container, or in a closed mold – under ambient conditions to completion produce a foamed product. This foamed product is then cured by high frequency electromagnetic radiation, thermal energy, or a combination thereof. Alternatively, the process is adapted for spraying or extrusion.